September 2002 Monthly Progress Report

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Curator: *Natalie Jaquith*
Responsible Official: *Dr. Joseph H. King, Code 633*
Last Revised: *Thursday, 24-Oct-2002 10:38:02 EDT [NAB]*

Task Assignment 99-001-00
September 2002

MANAGEMENT
GSFC ATR - Dr. J. Green
Raytheon ITSS Task Leader - L. Mayo
Raytheon ITSS Group Manager - L. Mayo

TASK OBJECTIVE: The non-personal services required under this task include performing all necessary functions to manage Raytheon ITSS contract staff supporting the Space Science Data Operations Office (SSDOO). The Raytheon ITSS management team will meet with the SSDOO management team to discuss significant events and contract highlights to be presented to upper management and Headquarters, and current contract issues and concerns.

SIGNIFICANT EVENTS:

- Staff held weekly senior staff meetings.
- Staff provided support to employees to assist them in coping with anniversary of September 11th bombings.
- Staff supported members of ADC caught in the budget cut.
- Staff continued working on 6 sigma processes for SSDOO.
- Staff met with the University of Maryland to arrange conference support for Data Centers Symposium.

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Curator: *Natalie Jaquith*
Responsible Official: *Dr. Joseph H. King, Code 633*
Last Revised: *Thursday, 24-Oct-2002 15:06:53 EDT [NAJ]*

Task Assignment 99-003-00
September 2002

ASTROPHYSICS MISSION SUPPORT SERVICES
GSFC ATR - Dr. N. Gehrels
Raytheon ITSS Task Leader - Dr. J. F. Cooper
Raytheon ITSS Group Manager -

TASK OBJECTIVE: This task provides support and consultation services for the Compton Gamma Ray Observatory (CGRO) project scientist in areas of data management, analysis, and archiving for CGRP and for the HIC experiment on the Galileo spacecraft. This support includes attending GRO Science Working Group meetings, aiding target-of-opportunity decisions, monitoring the health of the spacecraft, and presenting GRO papers at scientific meetings. In addition, this task will provide consultation on data products from the HIC.

SIGNIFICANT EVENTS:

1. For the Galileo Orbiter data analysis at Io the task staff focused on empirical modeling for the I27 Io flyby, which provided magnetic field and HIC ion data both upstream and downstream at low Io-centric latitudes. Field components in the Z (north-south) and Y (upstream-downstream) directions were easily modeled, but those in the X (jovian/anti-jovian) direction are more complex and may be suggestive of a spatially-variable induced field.

2. The Task Leader solicited and received energetic particle composition data from the Ulysses HISCALE experiment (C. Maclennan, Lucent Corp.) for investigation of carbon, sulfur, nitrogen, and oxygen ion ratios and fluxes in the jovian magnetosphere near the orbits of Ganymede and Callisto. In this region the MeV/ nucleon abundances appear be of interplanetary rather than iogenic origin, which may account for global distributions of carbon dioxide on both of these satellites.

3. Although a Lead Team proposal for "Space Physics of Life" to the NASA Astrobiology Institute does not appear feasible now, in view of another ongoing GSFC proposal on a different topic, the alternative idea of a special conference preceding a future proposal was discussed with, and supported by, T. Eastman and J. Green.

4. Model ion flux spectra for a solar wind termination shock near 85 AU were corrected after a review of relevant literature for application to cosmic ray irradiation of Kuiper Belt comets. Flux and dosage-vs-depth profiles are being regenerated from the corrected spectra in collaboration with E. R. Christian (NASA Headquarters) for presentation at the upcoming COSPAR 2002 meeting.

5. Task staff processed and analyzed EGRET files R24745753-71.

6. The Task Leader worked on task budget estimates for FY03 with the ATR and . Task funding at present monthly levels is expected to continue through December 2002 but may end thereafter. Research contract funds will be used to supplement the Task Leader's support in the interim.

UPCOMING MILESTONES/EVENTS:

1. Presentations on task-related research will be given at the October 2002 COSPAR meeting in Houston and at the December 2002 Fall AGU meeting in San Francisco, California.

PROBLEMS OR AREAS OF CONCERN: Task funding for work beyond December 2002 is presently uncertain.

RELATIONS TO OTHER TASKS: Work on this task is being supplemented by support from the SSDOO project and the two active Jovian System Data Anaysis Program contracts with Raytheon ITSS. Funding from another contract on radiolytic chemistry modeling for Europa from the NASA Planetary Atmospheres Program is expected to begin later this year.

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Task Assignment 99-101-00
September 2002

AMASE-MOCHA-CONCAT DEVELOPMENT
GSFC ATR - Dr. C. Cheung
Raytheon ITSS Task Leader - E. Shava
Raytheon ITSS Group Manager -

TASK OBJECTIVE: This task provides support for the development of the object -oriented data base multispectral astrophysics data catalog, AMASE (Astrophysics Multimission Archive Search Engine) as an interface to NASA's astrophysics data holdings. This effort is a collaborative one with the University of Maryland (UMD) Computer Science Department, and frequent interactions with UMD counterparts are expected. The general goal for this performance period is to develop the AM ASE prototype into an astronomical search and discovery engine by expanding the data contents and augmenting the search capabilities. Work includes incorporating astrophysics data from other wavelength bands to complete the electromagnetic spectrum and developing procedures to access remote relational data bases.

SIGNIFICANT EVENTS:

A. DSA:
1. Staff worked on XML telemetry language for OMG RFP.
2. Staff worked on Executive Summary slides of DAPFA.
3. Staff Presented Executive Summary to ESTO staff and SEEDS staff.

B. DSE:
1. Staff attended general DSE weekly meetings.
2. Staff attended DSE demonstration weekly meetings.
3. Staff took part in numerous demonstrations of DSE including MMS staff.

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Task Assignment 99-102-00
September 2002

ADC
GSFC ATR - Dr. C. Cheung
Raytheon ITSS Task Leader - J. Gass
Raytheon ITSS Group Manager -

TASK OBJECTIVE: This task operates the Astronomical Data Center, develops multispectral astrophysical metadata interfaces, and provides FITS data format support for the SSDOO.

SIGNIFICANT EVENTS:

- Staff answered two science questions.
- Staff member attended a Website Section 508 compliance course.
- Staff turned over all ADC data acquisition work in progress to CDS.
- Staff posted message informing our users of our termination and the redirection of similar services to other sites on the ADC Web site.
- Staff prepared and distributed the last ADC Electronic newsletter. It contained the announcement of the termination of the ADC.
- Staff changed the "mailto" help address on the ADC Web pages. to "webmaster@adc.gsfc.nasa.gov" and "webmaster" has been aliased to the "websrvr" account.
- Staff made additional changes to ADC Web pages as a result of the termination of our services.

UPCOMING PLANS/EVENTS/MILESTONES: The ADC will close next month. No further work is anticipated.

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Task Assignment 99-104-00
September 2002

INFRARED/SUBMILLIMETER/RADIO ASTROPHYSICS DATA MANAGEMENT
GSFC ATR - Dr. D. Leisawitz
Raytheon ITSS Task Leader -
Raytheon ITSS Group Manager -

TASK OBJECTIVE: The contractor shall perform the following tasks applicable to each of the NASA astrophysics missions, COBE, IRAS, SWAS, MAP, ISO, SOFIA, MSX, WIRE, SIRTF, 2MASS, and possibly others identified by the government: Planning and Communication, Interactions with Projects, Improving Data Management Processes, Data Processing, Data Archiving and Archive Quality Assurance, Archival Research Support, Miscellaneous, and General Guidelines (as given in the detailed task description).

SIGNIFICANT EVENTS:

- Staff supported NASA Astrophysics Data centers Executive Council (ADEC) discussions that involved Code 630/631 activities. This included participation in the September 27 ADEC telecon during which the termination of ADC and IR/Submm/Radio astrophysics data management activities at SSDOO were discussed.

- Staff reviewed the FIR/SMM space astronomy community white paper from the "Second Workshop on New Concepts for Far-Infrared/Submillimeter Space Astronomy."

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Task Assignment 99-110-00
September 2002

AUTONOMOUS TECHNOLOGY
GSFC ATR - Dr. M. E. Van Steenberg
Raytheon ITSS Task Leader - R. Dunlap
Raytheon ITSS Group Manager -

TASK OBJECTIVE: The objective of this task is to support the development of a simulation environment that supports autonomous distributed spacecraft control and test science collection techniques using artificial intelligence (AI) technologies. This work is in collaboration with the GSFC's Guidance, Navigation and Control Center and JPL's Automation and Control group. The contractor shall support the following activities and contribute to reports and white papers as appropriate: (a) evaluate Science Quick-Look Analysis Tools (e.g., HEASARC) for use as on-board analysis tools, (b) define Typical Science-Driven Maneuver Automation Requirements, (c) define Typical Science Automation Requirements, (d) define Basic System Architecture, and (e) develop rapidly a prototype to demonstrate key capabilities.

SIGNIFICANT EVENTS: No work was performed on this task during the reporting period.

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Task Assignment 99-113-00
September 2002

GLAST
GSFC ATR - R. Fink
Raytheon ITSS Task Leader - J. Palencia
Raytheon ITSS Group Manager -

TASK OBJECTIVE: GLAST is a multipartner gamma-ray survey mission with a GO observation component. The ADF will provide a prototype public archive design using Beowulf and other related technology. The prototype will implement the archive design using the Compton Gamma Ray Observatory EGRET data set. The contractor shall provide personnel to support the following tasks: (1) systems administration support of the Beowulf cluster and (2) programming support as requested for implementing the archive prototype.

SIGNIFICANT EVENTS:

- Staff implemented C3C, Ganglia, SIS on the 148-Processor BLISS cluster.
- Staff assisted in the hardware evaluation/burn-in of the BLISS Cluster.
- Staff assisted in the system administration of HPC's Beowulf Clusters (MEDUSA).
- Staff assisted in the system administration of Medusa Workstations.
- Staff provided system administration for the BLISS Beowulf Cluster.
- Staff provided system administration for the Glast Beowulf Cluster.
- Staff provided system administration for the SIMDOG Beowulf Cluster.

UPCOMING MILESTONES/EVENTS:

- Staff studies and evaluates SCYLD on Orka Beowulf Cluster.
- Staff implements PBS, PVFS, MPICH_GM on the 148-processor BLISS Code 600 cluster.
- Staff continues to write and work on her thesis.

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Task Assignment 99-115-00
September 2002

SWIFT
GSFC ATR - Dr. R. Fink
Raytheon ITSS Task Leader - Dr. E. Pier
Raytheon ITSS Group Manager -

TASK OBJECTIVE: Swift is a multipartner gamma-ray burst detection and follow-up observation mission. The Astrophysics Data Facility (ADF) will provide science data processing pipeline design, development, and operations. In addition, the ADF will be responsible for providing Quicklook processing to the Swift Mission Operations Center (MOC) at Pennsylvania State University (PSU). The final outputs of the pipeline processing will be delivered to the HEASARC at GSFC and to project partners in England and Italy.

SIGNIFICANT EVENTS:

- Staff incorporated XRT tools into processing script, however tests runs show that they all crash when run on the current FITS files. There are no UVOT FITS data available to make testing of the UVOT tools in the processing script possible.

- Staff developed and tested several sections of the processing script for coordinate conversions, filtering, determining the start and end times of an observation, and extracting attitude data.

- Staff obtained ITOS databases for all three instruments and encorporated needed parts into the xing telemetry browser.

- Staff obtained CCSDS telemetry files for all three instruments, and processed them with the telemetry ingest front end and preliminary processing script.

- Staff continued network performance tests with Leicester.

- Staff wrote prototype software to demonstrate extraction of UVOT image data and to explore the data available in the telemetry for FITS keywords.

- Staff wrote C++ code to extract and collate attitude data

UPCOMING MILESTONES/EVENTS:

- Work with the XRT team to correct the obs/target IDs in the Panter test data.

- Staff will set up and test data transfers with the MOC.

- Staff will participate in continued data transfer tests with the archives.

- Staff will continue testing the processing pipeline with new versions of the FITS converters and as new input data become available from the instrument teams.

- Staff will continue development of the processing script as working software tools become available.

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Task Assignment 99-201-00
September 2002

IMAGE
GSFC ATR - R. Burley
Raytheon ITSS Task Leader - C. Klipsch
Raytheon ITSS Group Manager -

TASK OBJECTIVE: The objectives of the IMAGE Mission Data System task are to develop, test, and maintain the IMAGE Web data access and display system, the IMAGE data processing system, and the IMAGE data distribution system.

SIGNIFICANT EVENTS:

- Staff created five new Web pages (ftp pwg, Polar, Wind, Geotail, and PWG) for B. Giles.

- Staff modified several Web pages that are linked to new Web pages.

- The Wind NRT (Near Real Time) data processing software and plotting software was modified to retrieve data from the new PWG machine vs. the CDHF. There were several days where the data recieved were not correct so the plots for those days are invalid, but the PWG team debugged the problem and the data being received and the generated plots now appear to be correct.

- The usage for the Wind NRT web site is as follows: outside users: 872; internal PI users: 69. The entire ISTP (PWG) web site received 484,184 accesses (without developers).

UPCOMING MILESTONES/EVENTS:

- Staff worked with D. Stern to combine multiple versions of the PWG Education Web pages and verify that the correct information is posted on-line.

- Modifications are expected to be made to new Web pages.

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Task Assignment 99-202-00
September 2002

MAGNETOSPHERIC MODELING AND ANALYSIS
GSFC ATR - Dr. S. Fung
Raytheon ITSS Task Leader - Dr. L. Tan
Raytheon ITSS Group Manager -

TASK OBJECTIVE: This task calls for (1) the performance of analysis supporting the development of a new generation of trapped radiation, (2) the documentation and analysis support in an ongoing SSDOO research program on the outer magnetosphere, and (3) ISTP campaign coordination.

SIGNIFICANT EVENTS:

1. Task staff made some ad hoc queries to the magnetospheric state parameter database in order to support work being performed for a poster paper to be presented at COSPAR in October 2002.

2. Task staff began coding a simple Perl script to test some concepts and algorithms in querying the magnetospheric state parameter database, to later be used in the Java coding of the final product.

3. Task staff examined the trapped particle data collected by the NOAA-5 and -6 satellites. Plots of particle count rates against the L value for selected magnetospheric state parameters (Kp, Vsw) were created for a poster paper to be presented at COSPAR in October 2002.

UPCOMING MILESTONES/EVENTS: Task staffs continued their work to provide the data products for the poster paper entitled "Development of a magnetospheric state-based trapped radiation data base" (Authors: S. F. Fung et al.) to be presented in the 34th COSPAR Scientific Assembly, to be held in Houston, Texas, on October 10-19, 2002.

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Task Assignment 99-203-00
September 2002

SPACE SCIENCE VISUALIZATION FACILITY
GSFC ATR - Dr. R. Kessel
Raytheon ITSS Task Leader - J. Friedlander
Raytheon ITSS Group Manager -

TASK OBJECTIVE: The task of the Space Science Visualization Facility within the SSDOO is to support the SSDOO education and outreach activities, scientific analyses, and IMAGE mission activities. Members of the facility will need to work closely with the space science community in order to create appropriate space science videos, illustrations, and displays and to develop overall approaches and procedures for the maintenance of the task.

SIGNIFICANT EVENTS:

- Staff completed HDTV video presentation for Living With a Star Display at International Space Congress meeting in Houston, Texas. Presentation is in the process of being recompressed to play more smoothly off a laptop.

- Staff assisted LWS in creating eight foot by fifteen foot backdrop for ISC display.

- Staff illustrated a flyer for the SSDOO Chief announcing the commissioning party for the Beowolf for Lisa Source Simulation (BLISS) super computer unveiled September 19, 2002 in building 28.

- Staff photographed reception for cluster kickoff.

- Staff illustrated a diagram for the Space Science Data Operations Office (SSDOO) Chief for an upcoming publication that depicts the Sun-Earth Connection (SEC) Active Archive.

- Staff added more necessary sections to the Sun-Earth Day 2003 Web site. Staff made some changes to on line forms.

- Staff is in the process of creating a new "Alert System" and has already begun to create the new forms for the Student Observation network (SON). Staff already generated some perl scripts for these forms and is working on getting a database set up.

- Staff efforts on DPS site are complete and have added to the current content.

- Staff created field line animation for living with a star.

- Staff created field line animation for April 23-24, 2003 solar event.

- Staff assited in creating EUV and WIC movies for April 23, 2003 event.

- Staff rendered CME animation and Ring current animation in cooperation with science input.

- Staff performed routine upgrades to systems by updating Operating Systems.

- Staff troubleshot methods for displaying HDTV movies on non-HDTV machines

- Staff upgraded Visualization lab Render farm software.

- Staff created one poster for L. Mayo and completed the majority of another poster.
- Staff continued research on new MPEG 2 encoding software.

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Task Assignment 99-204-00
September 2002

SPACE PHYSICS SOFTWARE DEVELOPMENT, SYSTEM MAINTENANCE, AND SPECIAL PROJECTS
GSFC ATR - Dr. R. McGuire
Raytheon ITSS Task Leader - T. Kovalick
Raytheon ITSS Group Manager -

TASK OBJECTIVE: The objectives of the space physics development task are to design, develop, document, support, and promote the re-engineering of the SSC Software Systems and the CDAW Graphics Systems. These software systems will support Satellite Situation Center (SSC) Operations, ISTP SPOF, SPDS, STEP, other NASA projects, and the space physics community in general. Accomplishing this objective requires maintenance of the software in both a UNIX and VMS environment, use of appropriate software development tools and methods, development of concise documentation, definition of new magnetospheric field and region models, and communication with scientists and end users both at the NSSDC and in the larger space physics community to ensure that their needs and requirements are being met. This task will work closely with the CDF/graphics task to fulfill its responsibilities. CRUSO in particular will play an important user support role for both SSC and the CDAW Graphics System. It will serve as the first point of contact for users, distribute documentation, answer simple questions, and forward software and science questions to this task and to SSC Operations.

SIGNIFICANT EVENTS:

1. Work on CDAWeb Software: Staff completed the Section 508 overhall of the system. Staff continued investigating the geographic registration problem long suspected by staff and recently reported by a user of the Polar UVI/VIS image data. Staff reviewed all of the mapped image displays of the IMAGE instrument data and made corrections to the associated code where appropriate; some additional problems were found and are being corrected. Staff began working on generating multiple inventory plots for each CDAWeb view so that the plots are more readable/useful. Began developing a plan and associated software changes to further divide the ISIS files into monthly directories for our ftp site and the mirror sites. Added the new Polar/Wind/Geotail ingest account and associated software; validated the cdfs and ingested several batches of files into the system. Plans for permanently shutting down NDADS/ISTP pipeline software, in association with the operations group, are being made. Staff debugged and corrected the system resources necessary for the CDAWeb meta-data database software; the default stack size on the system was not large enough to accommodate the large numbers of files per dataset that are now supported for the ISIS project. In addition a group and file permission security problem was found and corrected; the correction temporarily disabled access to the Cluster prime parameter data.

2. CDAWeb Design work: Staff continued thinking about the various requirements and is formulating an approach.

3. Work on SSCWeb Software: Staff completed the Section 508 overhall of the system. Staff is rewriting the calculator servlet so that it will work within the new Java environment. Staff are also pursuing

isolating and fixing several user interface issues discovered during the porting effort. Staff worked with B. Harris to test the TIPSOD application on more platforms. Staff added the GOES-12 satellite to the interfaces.

4. CDAWeb Statistics: The statistics include GSFC, RAL, ISAS and EDC: CDAWeb fulfilled 8,775 plotting requests, 9.101 ASCII listing requests and 253 CDF delivery requests, where each request can contain more than one plot/listing/file; (RAL: 32, 0, 2), (ISAS: 51, 128, 1) and (EDC: 6, 5, 0); there were 94,824 total accesses to the rumba CDAWeb HTTP Server. The anonymous ftp site delivered 37.7 Gb of data; 91,418 CDF files and 36 software/document files to non-staff users. The "overall" ftp statistics file was updated and can be found at http://cdaweb/cdaweb/logs/FTPaccumulative_record.html. The monthly web server and ftp statistics files can be found at http://cdaweb/cdaweb/logs.

5. SSC Statistics: Usage statistics from ubatuba, are as follows: There were 30 accesses of the SSC Version 3.0 Main Menu; Locator was executed 3 times; Query was executed once; the Data Base listing was not accessed; the Calculator was not accessed; the File Output option of the system was executed 30 times and the FTP option was executed 23 times.

6. Usage statistics for the Web-based versions of SSC Query and SSC Locator programs are as follows: The query_server was executed a total of 44 times; the tabular_server was executed a total of 991 times; the graphical_server was executed 1,304 times for a total of 2,339 accesses, excluding developers. In addition, the SPOF accessed the systems 11 times; SSC Operations staff accessed the systems nine times. The SSC Web pages (main page as well as any GIF, user's guide, etc.) were accessed 6,332 times, with 38 accesses by SPOF staff and 34 accesses by SSC Operations staff.

7. Mirror Sites: RAL, ISAS and EDC are retrieving their provided data and software updates on a regular basis through their FTP accounts. Usage statistics were received from RAL and EDC this month; these numbers were incorporated into the CDAWeb statistics listed above. Staff worked extensively with ISAS in order to get their data flow back up to speed, after their disk tower holding their CDAWEb data failed.

8. Ingest/operational activities: The CDAWeb metadata generator and inventory plot generation software are being executed nightly. As part of this process, any new MAP, IMAGE, LANL, GOES, ACE, FAST, Polar, ISIS, Cluster and PWG (the new Polar/Wind/Geotail replacement for the CDHF) files are being "ingested" as well. A user reported unusual values in many of the Ulysses KET data files, after investigating it was determined that all files produced by ESTEC after March 10, 1999, for all instruments on Ulysses (except H0_GLG), don't appear to contain good values; thus the affected files were removed from CDAWeb and we are working with the data provider to acquire corrected files. The process of copying and compressing all of the ISIS2 CDFs from nssdcftp to rumba continues; it is expected to take approximately one more month. In addition, the master cdf "notes" web pages were updated each week.

9. PWG software re-engineering effort: The Wind NRT data stream was switched from the CDHF to the new PWG data machine. Staff worked with the PWG re-engineering folks to debug and correct some initial problems. Everything appears to be working correctly now.

10. New SPDF web site : Some corrections to the associated SPDS site were made.

UPCOMING MILESTONES/EVENTS:

1. A new RAID disk tower for the rumba machine is expected soon; plans are being made for its optimal configuration.

2. Staff will assist the ATR with providing documentation and the appropriate level of information to help define meaningful assignments for a new co-op. student.

3. Staff will continue to work with the IMAGE project personnel to validate the CDAWeb displays of the IMAGE data.

4. Staff will continue testing and maintenance on CDAWeb and testing/enhancing all of the plotting and listing software.

5. Staff will continue testing, modifying, and documenting the CDAWlib software and associated Web pages.

6. Staff will continue testing and maintenance of the SSCWEb system.

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Task Assignment 99-205-00
September 2002

SPACE PHYSICS DATA ACQUISITION AND VALUE-ADDED SERVICES
GSFC ATR - Dr. R. McGuire
Raytheon ITSS Task Leader - Dr. H. Hills
Raytheon ITSS Group Manager - T. Kovalick

TASK OBJECTIVE: The objectives of this task are four-fold: 1. to support space physics and information acquisition for NSSDC, including support for ingest to the near-line/on-line archive and/or for distribution as CD-ROMs; 2. to support value-added space physics services, including operation of the SSC, creation of new composite space physics data/model products, definition of science user requirements for SSDOO systems and other NSSDC data and information systems, and science-expert support for other efforts such as IACG and SPDS as appropriate; 3. to carry out selected archival research and mission planning activities, including publication of results; and 4. to provide logistics support as directed for working meetings related to SPDS, including travel reimbursement.

SIGNIFICANT EVENTS:

1. DIONAS INGEST:

a. DE: Readme files were prepared for all DE-2 and DE-1 directories on nssdcftp including links to data set documentation.

b. ISIS: Routine ingest continued at the usual rate.

c. SAMPEX: Routine ingest of all four datasets continued; also the creation of two CDFs for ingest into CDAWeb.

d. Wind/WAVES: After a long hiatus, the PS files from Wind/Waves have now been moved to NSSDCFTP. The collection of GIF files was extended to 2000, and further extension to current has been requested. The 0readme.txt was appropriately edited. The ingest via DIOnAS of the IDL-saved binaries Rad1, Rad2, and TNR remain on hold, and may not be asked for, because these three are absorbed into a CDF for ingest in CDAWeb. At any rate they remain easily available in PI's Website.

2. OTHER DATA INGEST:

a. Processing of the Polar CAMMICE data continued, and more problems were found. Results were sent to Reiner Friedel, and we are awaiting his response.

b. Long ago we received ISEE-1 CDFs from Ogilvie, but they were unusable because they had no accompanying metadata (also no "Epoch" variable). This month, after consultations with R. Fitzenreiter, the acqsci created a master CDF. Then the programmer combined the data and master CDFs, including within this process the creation of "Epoch" and modification of the variable "FN". Originally, FN was an array of six observations obtained while the other variables were obtained only once (in one spin period). In the new CDF, FN is a scalar, and a new record (with Epoch and other time variables) was inserted for the additional five times. The other variables now appear every 6th record, with fill data in the gaps using the CDF Sparse Records functions.

c. 6-month OMNI CDFs were updated.

d. Data were received thru istp-events and moved to appropriate directories on rumba for S. Boardsen and for J. King and N. Papitashvili.

e. Ulysses solar wind ion and electron data sets from the SWOOPS experiment were updated for August 2001, and Ulysses gamma ray data were updated for July 2002. Ulysses ephemeris and Level 1 CD-ROM data were updated for May to June 2002, and magnetometer data were extended for January to June 2001.

f. Information and CDF data files on the newly received Ulysses SWICS Version 2.0 Archive CD were uploaded for on-line accessibility to NSSDCFTP and replaced the previous Version 1.1 archive. The year 2000 CDF files were ingested into CDAWeb. A temporary problem on readability of the new files on CDAWeb was resolved in consultation with T. Kovalick.

g. M. Witte (MPI-Lindau, Germany) notified task staff that reprocessed and updated versions of the Ulysses GAS experiment data sets were available for electronic ingest into NSSDC. Acquisition of these data is now in progress.

h. Six-hour count rate and flux data from the Voyager 1 and 2 cosmic ray experiments were updated on NSSDCFTP for July-December 2001.

3. Data Set Contacts:

a. Yet another reminder was sent to Bob Brechwald (U.Iowa) regarding their selected VLF events from a number of s/c in digital format. Likewise Doug Hamilton (U.MD) was reminded about the status of his offer to enlighten us about the radiation belt electron contamination in CCE-CHEM data.

b. A meeting with Brian Dennis (GSFC) and his RHESSI team is being set up, to be attended by J. King and the Acqsci. Late September meeting had to be postponed.

4. AMPTE Conversions to ASCII:

H. Leckner is in the process of modifying the I/O commands in the old code to produce an ASCII version of CHEM data. Mass production of the ASCII files will be done with the concurrent ingest via DIOnAS of the binaries, in a few months.

5. ISIS-1 and -2: a. Copying all ISIS2 CDFs from nssdcftp to cdaweb continues. Each day 4000 CDFs are moved. As of 9/30 we have moved approximately 144000 CDFs.

b. A spreadsheet with information about the number and volume of TOPIST processed ISIS-2 files was prepared.

6. Task staff pointed out to C. Tranquille (ESTEC) that on-line accessible CDF toolkit software could be used to conduct local tests of Ulysses CDF files produced at ESTEC. Tranquille confirmed the earlier reported problem with corruption of real variable data in Ulysses CDF files produced on or before March 8, 1999 at ESTEC. He continues work to resolve this problem.

7. Maintenance of NSSDC Information Databases:

a. The TRF population process continued, with circulation of some of the 3 monthly issues.

b. The WWW versions of SPACEWARN Bulletins 576-585 had numerous corrections made to them to ensure Section 508 and HTML 4 (transitional) compliance.

c. SAMPEX NMC entries were reviewed. Since the seven datasets are composite from all four experiments, the 7 x 4 BDs were condensed to just 7, by removing from the dataset names the instrument specific names LICA, HILT, MAST, and PET. There are now just 7 data sets (and JEDS IDs) instead of 28.

d. Likewise, IRM (5-s binary) NMC entries were also reviewed, to trim down the four data sets and BDs and five JEDS IDs to just one composite data set and BD and one JEDs ID. However the four additional datasets from the IRM/SULEICA experiment in the single CDROM (ASCII) retain four BDs and four JEDS IDs, since they are independent, species-specific files.

e. The ISEE 3 data pool tape data set description was revised to have only one JEDS ID and a single comprehensive BD. Similar changes were made to the microfilm pool data, and to their counterparts in ISEE 1.

f. Pat Ross was assisted in assigning new ID numbers to merged mission data sets from AE-C, D, E, and DE-2; this single ID replaces the old multiple ID numbers that included a separate ID for each experiment included in the merged data set.

g. Various other new entries and updates were added to the information system.

8. SSC Ephemeris

a. Ephemeris information was created and updated into the SSC's UNIX data base for 31 spacecraft. Files for five spacecraft were updated for the [ACTIVE.IACG.ELEMENTS] directory.

9. The draft and final versions of SPX 586 were made available via WWW and FTP. SPX 587 was drafted and loaded online. It carries stories on seven launches. As usual, a copy of that was e-mailed to COSPAR. The style sheet for the

SPACEWARN Bulletin was corrected to be consistent with the current standard. Six WDC SI announcements regarding the launch and assignment of IDs to seven missions were sent by e-mail and posted to the Usenet News. Three CCSDS IDs were assigned for future mission/simulation telecommunications.

10. MAINTENANCE AND UPDATING ON THE VARIOUS WWW PAGES:
a. Algorithms and Models on WEB:

Accesses for this month:
CGM 587
IRI model 1832
MSIS model 811
IGRF model 449
TRAP particle model 543
T89 model 9
T96 model 11684
Heliospheric Ephemerides 499
IMP-8 daily position ... 14

b. COHOWEB and OMNIWEB systems (data and software)

1. Statistic programs for OMNIWeb and COHOWeb were corrected: a few NSSDC users were removed from the statistics account.

2. Updated FTP/OMNI and OMNIWeb data, adding new IMF data from ACE (up to May 7, 2002) and Geomagnetic indices (up to July 31, 2002).

Accesses for OMNIWEB: plots/list/scatter: 553 / 310 / 45 = 908
Accesses for COHOWEB: plots/list: 61 / 15 = 76

c. ATMOWEB system and FTPHelper (graphical browsing & retrieve FTP data)

1. Made new Plasma 92-sec. data from WIND accessible through FTP Browser

2. Made new ACE merged 4-min res. data for mid-2000 - 2001 years accessible through FTP Browser

FTPBrowsing accesses for this month (plotting/listing): 123 / 72 = 195 ATMOWeb accesses for this month (plotting/listing): / =

d. FTP site (System software, data ingest, creation of CD-Rs)

1. Reprocessed ACE plasma data for mid-2000 - 2001, adding new data. Reprocessed ACE 4-min-resolution merged data.

2. Downloaded new Wind Plasma data (including alpha particles) to FTP site (1995-2001) and updated documentation files.

e. Cosmic and Heliospheric pages and services

f. Geomagnetic and Magnetospheric Models through network

g. Space Physics home page

11. Support for Offline Tape Transition to Online (OTTO) Significant upgrades were made to the Perl scripts that update and print the information in otto.table. A new script was prepared to use the additional variables suggested by the group, and also to enable automated printing of the data set 00readme file and the ADID form for submission of a Registration Package with Supplemental Information. The script was successfully tested, but has not yet been linked with the database. Planned additional upgrades include generation of a "takefile" to control the ftp insertion of the 00readme file into nssdcftp, and generation of a file to control the submission of the ADID form to the Control Authority.

12. Meetings, Presentations, and Publications

a. An article by Papitashvili and Parthasarathy in the current NSSDC News Letter describes the ISEE3/ICE data and coordinates, along with the associated comets.

b. D. Bilitza submitted a proposal to NSF for a collaborative research project with Czech and Japanese scientists with the goal of archiving several Czech/Russian and Japanese data sets at NSSDC and to develop better topside models for IRI.

c. A paper describing the ITM/ATMOWeb data and the ISIS/TOPIST data that have recently become available online at nssdcftp was prepared and submitted to Advances in Space Research.

d. A paper describing the use of low latitude ionogram data for improvements of the IRI F peak model was prepared and submitted to Advances in Space Research.

e. A talk describing the IRI/ISO proposal was prepared for the World Space Congress in Houston, October 10-19.

REQUEST HIGHLIGHTS:

a. In response to a request from S. Bragg-Sitton (MSFC), a task scientist provided modified versions of Fortran read routines for CRRES PROTEL and HEEF data sets to allow binary-to-ascii extraction of these data on Windows PC computers. Previous versions of these routines only worked on UNIX platforms.

b. Several requester were assisted with inquiries regarding ITM data and models:

ACTIVITY LOG:

The NSSDC models sites on anonymous ftp and on the Web continue to be very popular:

	ftp				WWW							
2001	RAID	Model	atm	geom	ion	rad	solar	CGM	IRI	MSIS	IGRF	TRAP	hpage
Nov	49425	4175	854	627	2076	260	202	977	2333	13066	612	366	66026
Dec	36022	3736	701	613	1874	257	175	6485	1001	3599	304	125	61423
Jan02	154622	4926	968	819	2377	324	273	1505	3399	8270	454	244	69610
Feb	116199	7092	1078	659	3651	619	525	1106	2322	41633	475	621	71078
Mar	164875	10177	1869	1462	4682	640	740	717	1659	5257	528	161	73074
Apr	245162	6863	1134	884	3665	353	319	899	2220	1162	1266	122	74803
May	275487	4426	754	537	2208	305	261	1050	8238	944	1346	93	76584
Jun	133327	6892	891	709	3693	388	371	47412641		1055	702	84	78218
Jul	230906	8669	1559	993	4133	538	499	645	4486	570	491	42	
Aug					701	1953	983	510	65				
Sep					587	1832	811	449	543				

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----- ISIS ----------

Month	Files	GBy	Total	WWW	I	AE	Aer	DE	Exp	Hin	I/A	OGO	SM	SNOE
Oct	3,485	2.0	516.5	5178	I									
Nov				5339	I	886	12	1389	5	9	16	6	48	
Dec					I	18	7	61	6	41	64	1	1937	
Jan02	26,410	15.1	531.6	5640	I	1396	4	3154	11	44	13	47	379	29035
Feb	10,342	6.1	537.7	5736	I	25	5	371	3	22	836	8	29	4176
Mar	20,492	12.0	549.7	5917	I	179	18	48	99	83	78	27	17	14263
Apr	17,460	9.2	558.9	6057	I	50		215	15	5	22	1	5	16365
May	19,126	15.4	574.3	6257	I	52	9	271K	34	30	15	19	213	2

Month	Files	GBy	Total	WWW	I	AS	A2	DE	EX	I1	O6	ATW	I	AE	DE	EX	HI	IA	O6	SM	SO
Jun	16,552	9.5	583.8	6451	I	2	0	1	0	0	0	48	I	25	182	622	25	32	7	1	26
July	17,192	14.9	598.7																		
Aug	21,077	12.3	611.0																		
Sep	15,419	8.3	619.3																		

WWW file and plot accesses during August 2002 (and the yearly totals)
for interplanetary COHO-related data from COHOWeb, CDAWeb, and NSSDCFTP:
Deep Space (Ulysses, Voyager, Pioneer, etc.): 2,853 {2002 Total: 39,764}
Geospace (IMP-8, Prognoz, ACE, WIND, SOHO): 16,256 {2002 Total: 215,619}
[September results not available yet.]

UPCOMING EVENTS:

1. Task staff will provide Ulysses archiving information from NSSDC to C. Tranquille (ESTEC) for his presentation at Ulysses Science Working Team Meeting 48 in Houston on October 10-11, 2002.

2. Two task scientists will attend, and make research presentations at, the COSPAR 2002 conference in Houston on October 14-19, 2002.

3. A task scientist will co-host a special session on space weathering at the Fall 2002 AGU Meeting in San Francisco on December 6-10, 2002. He will also give a review on heliospheric missions and measurements related to space weathering for solar system bodies.

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Task Assignment 99-301-00
September 2002

COMPUTER SYSTEMS MANAGEMENT TASK
GSFC ATR - C. Barrett
Raytheon ITSS Task Leader - J. Jacobi
Raytheon ITSS Group Manager -

TASK OBJECTIVE: The objectives of this task are to provide systems analysis and technical support to the operational computer activities of the NSSDC; to maintain existing hardware and system-level software to ensure the optimal performance and utilization of its resources and connectivity to its computing sites; to integrate new hardware and system-level software into existing systems to achieve upgraded capabilities and state-of-the-art facilities; to administer specialized software such as data base and optical disk management systems; and to provide users with the necessary documentation, training, and assistance so that NCF resources are fully utilized.

SIGNIFICANT EVENTS:

- Staff is continuing to work through IRAF software issues.

- Staff installed and configured Java Web Services Developers Pack and installed a new graphics card on UBATUBA. Also configured automatic log rotation for UBATUBA Web server log files.

- Staff helped troubleshoot a stack overflow problem and recommended a programmatic solution for an operational CDAWEB program.

- Staff fixed anonymous ftp on voycrs, which was not built correctly consequently would not work for all ftp clients.

- Staff added users to messier and java.

- Staff contacted HP to fix rosette. It required HP to send a technician to replace the motherboard.

- Staff continued working with Syncsort to resolve the LTO troubles. Ran two test backups, one using debugging to get more information. The second used debugging and the LTO without the robotics. Still waiting for Syncsort's analysis of the results.

- Staff fixed the disk drive problem on rings. Analysis showed that the drive case had a power supply problem.

- Staff began building a new apache and tomcat server on java. Due to bugs in the apache build process and gcc, this will continue into October 2002.

- Staff helped set up a beowulf cluster. Loaded each node with the OS and configured the BIOS.

- Staff rebuilt xfiles, and worked on upgrading bolero and the IRIX machines.

- Staff continued to perform routine system administrative duties, including backups, application of stupid and confusing software upgrades and patches, providing assistance to users, and maintaining the IP spreadsheets and equipment database.

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Task Assignment 99-302-00
September 2002

SYSTEMS NETWORKING AND SMALL SYSTEMS
GSFC ATR - G. Goucher
Raytheon ITSS Task Leader - R. Dunlap
Raytheon ITSS Group Manager -

TASK OBJECTIVE: The objective of this task is to provide network engineering support to Code 600.

SIGNIFICANT EVENTS:

- Staff began upgrades of Raytheon computers.
- Staff provided networking support for the beowolf cluster in building 28.
- Staff continues work to develop the Code 630 Web-based equipment data base.

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Task Assignment 99-303-00
September 2002

NSSDC COMMON DATA FORMAT (CDF)
GSFC ATR - D. Han
Raytheon ITSS Task Leader - M. Liu
Raytheon ITSS Group Manager - T. Kovalick

TASK OBJECTIVE: The objectives of this task are to carry out computer science research, develop computer software and provide user support for the NSSDC Common Data Format (CDF).

SIGNIFICANT EVENTS:

1. Staff continues to study on how CDF support can provide a better assistance to the ISTP community. A couple of currently used software has been identified which can be enhanced to allow data producers to validate and create ISTP compliant files.

2. A couple of problems with our Java-based Tool programs are being worked on. These problems were caused by the later Java Virtual Machines on various platforms.

3. About five user requests/questions were received this month.

CONCERNS AND PROBLEM AREAS:

1. The GZIP compression/decompression option is turned off for 16-bit DOS/Windows 3.x due to its memory constraint.

2. A unusual problem occurs with the older Microsoft C 7.00 compiler in one of the EPOCH parsing routines on DOS/Windows 3.x. It occurs while using the floating point functions and type casting. It is suspected that the Microsoft executables may be getting too large and will require memory overlaying.

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Task Assignment 99-304-00
September 2002

PLES
GSFC ATR - N. James
Raytheon ITSS Task Leader - Dr. D. Williams
Raytheon ITSS Group Manager - T. Kovalick

TASK OBJECTIVE: The objectives of this task are to maintain data bases and metadata (NMC, WWW) for planetary, Earth sciences, and selected astrophysics data (HEASARC, EUVE, HST), provide request support and coordinate updates of user interfaces, coordinate WWW activities, support internal and external data base users, assure data set quality, coordinate planetary data acquisition and Earth science data transition, support educational activities, and coordinate publications.

SIGNIFICANT EVENTS:

- The NSSDC WWW server had a total of 11,614,529 error-free accesses logged for September, an increase of 18.8% compared to August.
- Task staff responded to over 210 e-mail queries and phone calls from external users and the Request Office.
- Task member reviewed solar system chapters and lesson plans for the Smithsonian Earth in Space book.
- Task personnel made numerous updates to the Moon Tree pages as a result of information received due to the renewed interest in the Moon Trees.
- Task member made updates to the NSSDC Photo Gallery style sheet formats.
- Task staff opened two new data sets for NEAR Radio Science and Infrared Spectrometer Data.
- Task personnel updated the spacecraft record for CONTOUR.
- Task member wrote article for the NSSDC newsletter on the transfer of large volume of data from Magellan tapes to CD.
- Task staff updated dataset records for NEAR DVD's.

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Task Assignment 99-305-00
September 2002

NASA SCIENCE OFFICE OF STANDARDS AND TECHNOLOGY (NOST)
GSFC ATR - D. Sawyer
Raytheon ITSS Task Leader - J. Garrett
Raytheon ITSS Group Manager -

TASK OBJECTIVE: The objective of this task is to maintain and expand the NOST so that it can effectively respond to the standards needs of the NSSDC community.

SIGNIFICANT EVENTS:

- Staff is continuing to work through IRAF software issues.

- Staff installed and configured Java Web Services Developers Pack and installed a new graphics card on UBATUBA. Also configured automatic log rotation for UBATUBA web server log files.

- Staff helped troubleshoot a stack overflow problem and recommended a programmatic solution for an operational CDAWEB program.

- Staff fixed anonymous ftp on voycrs, which was not built correctly consequently would not work for all ftp clients.

- Staff added users to messier and java.

- Staff contacted HP to fix rosette. It required HP to send a technician to replace the motherboard.

- Staff continued working with Syncsort to resolve the LTO troubles. Ran two test backups, one using debugging to get more information. The second used debugging and the LTO without the robotics. Still waiting for Syncsort's analysis of the results.

- Staff fixed the disk drive problem on rings. Analysis showed that the drive case had a power supply problem.

- Staff began building a new apache and tomcat server on java. Due to bugs in the apache build process and gcc, this will continue into October 2002.

- Staff helped set up a beowulf cluster. Loaded each node with the OS and configured the BIOS.

- Staff rebuilt xfiles, and worked on upgrading bolero and the IRIX machines.

- Continued to perform routine system administrative duties, including backups, application of stupid and confusing software upgrades and patches, providing assistance to users, and maintaining the IP spreadsheets and equipment database.

Task Assignment 99-306-00
September 2002

INFORMATION (METADATA) SYSTEMS DEVELOPMENT AND UPGRADES
GSFC ATR - Dr. J. Thieman
Raytheon ITSS Task Leader -
Raytheon ITSS Group Manager - T. Kovalick

TASK OBJECTIVE: The objectives of this task are to define and develop information systems and the interfaces thereto, maintain these systems and interfaces and support the generation of reports therefrom, and recommend and participate in the planning of upgrades to necessary support systems and software as appropriate.

SIGNIFICANT EVENTS:

- A demonstration of JIN was given to operations personnel.

- Staff delivered a revised schedule of task activities and current status to the ATR.

- Work on the task request system included: (1) writing a Perl script for J. Kodis (Raytheon) to support his extensions to the system; (2) modifications to the forms/scripts as a result of TR 1080; and, (3) modifications to HTML pages to incorporate J. Kodis' extensions.

- JIN work included: (1) completion of batch adds; (2) completion of the tape clone feature; (2) deployment of working version .2.0b of JIN to decaf; (3) testing of the interface as so far implemented; (4) updates of the software specifications document to reflect Sign In/Out descriptions; and, (5) modification of the user interface based upon recommendations given during the demonstration.

- Staff worked on Sign In/Out feature of JIN, including: (1) a sequence diagram; (2) review of current database design; (3) design of revised/new database tables; and, (4) addressing migration problems/issues.

- Database work for JIN included: (1) building and loading of the med_sign_in_out table; (2) recreation of the media_new table, adding the current status from the sign in/out table; (3) setting up an account to allow R. Buck (Raytheon) to test the interface; and, (4) writing a JDBC method, getDatasetIds(), in class Med_Dataset and an accompanying stored procedure for this method.

- Staff eliminated Nancy Oliversen as the NSSDC contact for all experiments and data sets and replaced her with Beth Brown. (This was causing a problem with NMC.)

- Staff fixed the quantity of data volumes for SPIO-00378 and SPIO-00379 for P. Ross (Raytheon). (This was causing a problem with NMC.)

- Staff fixed a problem with the GALEX supplemental file for B. Brown (Code 633) which was causing it to not display properly in NMC.

- Staff altered the ADC contact information in the CD-ROM Catalog.

UPCOMING MILESTONES/EVENTS: Work will continue on JIN.

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Task Assignment 99-307-00
September 2002

SUN-EARTH CONNECTION EDUCATION FORUM (SECEF)
GSFC ATR - Dr. J. Thieman
Raytheon ITSS Task Leader - Dr. S. Odenwald
Raytheon ITSS Group Manager - L. Mayo

TASK OBJECTIVE: The objective of this task is to provide administrative support of the SECEF managers and assistance in preparing for educational outreach events, seek opportunities to leverage SECEF activities for broad national impact, and assist in publicity for the SECEF by developing content for a Web site and publications.

SIGNIFICANT EVENTS:

- Staff is planning for 2004 Venus Transit.

- Staff attended the space science portion of the AESP annual conference and gathered some feedback from the specialists: need more science content than products, concern about copyright issues of GEMS guide, prefer enterprise personnel at conferences, and want to know the schedule of exhibits. SECEF was able to say only a few words about Sun-Earth Day. We also handed out the flyer, solar pizza, and the SOHO CME lenticular.

- Staff inventoried all printed materials and discussed near-future print jobs with management team members.

- Staff sent copies of the Phase II proposal to Maryland Science Center.

- Staff forwarded Sun-Earth Day information to ESA SOHO team and many museums and science centers.

- Staff submitted jobs to reprint the folder and the CD (with revisions).

- Staff arranged for missions and projects to forward 10,000 copies of various kinds to NASA CORE for packaging by November 1, 2002.

- Staff supported Goddard Public Affairs Office in the NBC4 Digital Edge Expo in the DC Convention Center. We demonstrated some visual data on a plasma screen, and handed out a couple of products.

- ASTC: preparation of handouts, booth set up and coordination with missions, forums, and HQ had begun.

- Staff supported Beth Jacob in calling together all SEC EPO leads to meet quarterly with Bob Gabrys and his staff to learn more about EPO initiatives and lessons learned.

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Task Assignment 99-312-00
September 2002

ANALYSIS SUPPORT FOR THE IMAGE MISSION
GSFC ATR - Dr. J. Green
Raytheon ITSS Task Leader - L. Garcia
Raytheon ITSS Group Manager - T. Kovalick

TASK OBJECTIVE: The objectives of the Analysis support for the IMAGE Mission task are to maintain and update local copies of the IMAGE software suite, create RPI data analysis software, and to create software to be used in correlative studies between IMAGE detectors and between IMAGE and other missions. This task will also support the synthesis of data and theory in the study of Earth's magnetosphere through creation of unique data products and services. This task will make available appropriate documentation for all of these objectives and will support the IMAGE Science Center Web site.

SIGNIFICANT EVENTS:

- Staff posted an agenda for the HENA meeting on the IMAGE Science Cenmter site.

- Staff produced plots of Web accesses to the IMAGE Science Center and POETRY Web pages for the quarter between early June 2002 and early September 2002 and sent these plots to J. Green.

- Staff created a Fall AGU page with 21 new abstracts and references for IMAGE talks at the meeting, created an EUV meeting page, and posted seven new references, three new abstracts, and two new documents to the IMAGE publication pages.

- Staff made modifications to CDAWlib IDL routines deviceopen, spectrogram,and colorbar so they will work through X11 window software on Mac OS X that support only TrueColor (24-bit). Sent descriptions of these modifications to B. Candey for addition into the CDAWlib library.

- Staff modified plotdensity program based on recommendations from S. Fung.

- Staff created plots of the variation of AKR frequency range with magnetic dipole tilt angle for work to be presented at the next American Geophysical Union meeting.

- Staff created CD-ROM of of three years of RPI dynamic spectrogram data for a code 690 scientitst to aid in the development of an automated tool for identification of the Upper Hybrid Resonance (UHR) band.

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Task Assignment 99-313-00
September 2002

COMMUNITY COORDINATED MODELING CENTER
GSFC ATR - Dr. M. Hesse
Raytheon ITSS Task Leader - M. Kuznetsova
Raytheon ITSS Group Manager - T. Kovalick

TASK OBJECTIVE: This task will provide science and software support for Community Coordinated Modeling Center (CCMC). Specific support includes developing and testing of simulation codes for space weather models, performing simulations of realistic space weather events, providing visualization and analysis software, performing comparison of modeling results to satellite measurements, performing research in space plasma physics.

SIGNIFICANT EVENTS:

- Staff setup simulations of magnetospheric response to strong southward IMF and reduced Earth's dipole strength.
- Staff performed simulations of April and May 2002 Sun-Earth Connection Events.
- Real-time version of BATSRUS simulations code was delivered to the Air Force RPC.

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Task Assignment 99-316-00
September 2002

Solar Nebula SiO
GSFC ATR - J. Nuth
Raytheon ITSS Task Leader - A. Ali
Raytheon ITSS Group Manager

TASK OBJECTIVE: The objective of this study is to carry out research and analysis of SiO cluster mass distributions from data obtained using the molecular beam apparatus located at Penn State University. This experimental setup produced a unique data set on the cluster distribution of SiO clusters produced by partial condensation following laser evaporation. Future experiments will concentrate on extending these basic experiments to isotopically labeled systems using pure Si[28] and enriched oxygen isotopes. These experiments are highly relevant to the origin of oxygen isotopic anomalies in the early solar nebula and present a very complex analytical problem.

SIGNIFICANT EVENTS: Staff continued analysis of the data of cluster mass distribution. Based on thermochemistry it is shown that oxidation is not a relevant step in the pathways of condensation reactions in the experiment.

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